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Case Report

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A rare cause of tumor ileus, mixed non-neuroendocrine neuroendocrine neoplasm (MINEN)

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ABSTRACT

This study aims to present two cases of a rare pathology. The findings of two patients diagnosed with ileus, whose pathology results indicated mixed neuroendocrine non-neuroendocrine neoplasm (MINEN), were evaluated and organized as case reports. Although uncommon, clinicians should consider this pathology in patients displaying symptoms of tumor ileus. MINEN, a type of neuroendocrine tumor, is an uncommon malignancy in the colon that can cause mechanical bowel obstruction similar to other tumors causing ileus. Mixed neuroendocrine-neuroendocrine neoplasms (MiNEN) are rare tumors with an unclear pathophysiology. To make this diagnosis, the tumor must contain at least 30% of both neuroendocrine cells and adenocarcinoma components. In this case report, two cases of patients who underwent surgery for tumor ileus and had postoperative pathology results compatible with MiNEN are presented.

Keywords: Ileus, neuroendocrine tumor, MINEN

INTRODUCTION

Approximately 2/3 of neuroendocrine neoplasms (NENs) are localized in the gastrointestinal tract (GI tract). These tumors, all of which have malignant potential, range from tumors with no clinical symptoms to tumors with poor prognosis. In the current World Health Organization (WHO) classification, tumors with neuroendocrine (NE) features are grouped under the main heading of NEN and classified into three main groups: well-differentiated neuroendocrine tumor (NET), poorly differentiated neuroendocrine carcinoma (NEC) and mixed neuroendocrine non-neuroendocrine neoplasm (MINEN), which includes both NE and non-NE tumor components. Mixed neuroendocrine-neuroendocrine neoplasms (MiNEN) are among rare neoplasms with unknown pathophysiology. For this diagnosis to be made, neuroendocrine cell and adenocarcinoma components must be present in at least 30% each.[1]

Colorectal MiNEN is one of the most common types of MiNEN. In one study, 1.1% and 2.4% of 988 resected colorectal neoplasms had pure NET and pure MINEN, respectively.[2] Rectal MINEN accounts for only 1-3% of rectal NEN, while colonic MINEN accounts for 14-20% of colonic NEN.[3] MINEN originating from the right colon is much less common than colorectal NEN.[3]

In approximately 25-40% of colonic NEN cases, the neuroendocrine component is poorly differentiated neuroendocrine carcinoma (PDNEC). The second component other than the neuroendocrine tumor component is usually adenocarcinoma, but can also be adenoma or squamous cell carcinoma.

Colorectal MiNEN has a worse prognosis than pure adenocarcinoma and is closer to PDNEC, especially in the metastatic stage. Metastatic risk has been found to be associated with the degree of neuroendocrine component.[4]

In this study, we aimed to present 2 cases of this rare pathology. The report was created by compiling preoperative imaging and postoperative pathology results of two patients who presented to the emergency department with tumor ileus and whose pathology results were reported as MINEN. The aim of the report is to provide a clear and concise documentation of these cases for academic and medical purposes.

CASE 1

A 75-year-old man with no known comorbidities other than hypertension and no previous abdominal surgery was admitted to the emergency department with abdominal pain and absence of gas and stool discharge for 3 days. On physical examination, general condition was moderate, oriented, coherent, and vital signs were stable. Abdominal distension was present. Defense and rebound were positive. Rectal touch was empty. Wbc was 12.3 and there was no

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significant pathology in biochemistry. The patient had no signs of carcinoid syndrome. There were levels in the standing direct abdominal radiography (Figure 1). Contrast-enhanced tomography performed under emergency conditions showed an irregular, tumoral wall thickening and lymph nodes in the adjacent adipose tissue, which almost completely obliterated the lumen in a segment of approximately 10 cm at the level of the sigmoid colon, reaching approximately 1.5 cm on one wall, showing contrast enhancement. The diameter of the descending colon was measured as 9 cm. When the patient's previous examinations were examined, it was seen that he had never had a colonoscopy. A nasogastric catheter and a urinary catheter were inserted, 100 cc of fecaloid came into the nasogastric catheter, intravenous fluid resuscitation was started and the patient was operated urgently with a prediagnosis of tumor ileus. Perioperatively, an approximately 5 cm mass originating from the rectosigmoid junction and completely obstructing the lumen was found (Figure 2). There were no findings compatible with metastasis in other intra-abdominal organs, and since there was dilatation in the proximal colonic anus, total mesocolic excision and end ostomy were decided to be performed. In the postoperative follow-up of the patient, his ostomy worked, nasogastric and urinary catheter were withdrawn and his regimen was gradually increased and he tolerated the regimen. She was discharged uneventfully on postoperative day 4. The pathology result was Mixed Neuroendocrine Non Neuroendocrine Neoplasm (MINEN). The neuroendocrine component was 40-50% and the morphology was grade 3 poorly differentiated neuroendocrine carcinoma. Ki67 index was 80% and mitotoic activity was >20-10/bba. Synaptophysin was positive. The adenocarcinoma component was moderately differentiated. No metastasis was detected in 17 removed lymph nodes and it was reported as T3N0. Postoperative surgical margins were reported as clear and the patient was referred to the oncology clinic. The patient is being followed up at the 6th postoperative month without any problems.

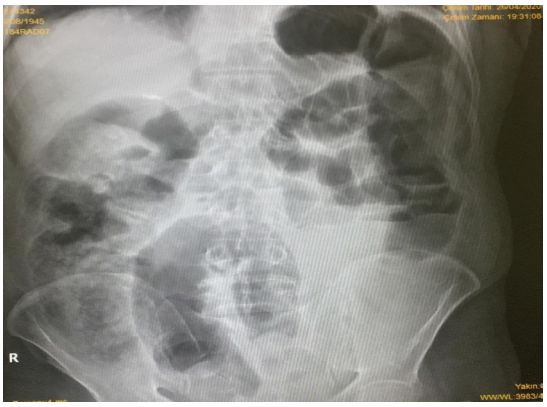

Figure 1. Air -fluid levels in standing direct abdominal radiography

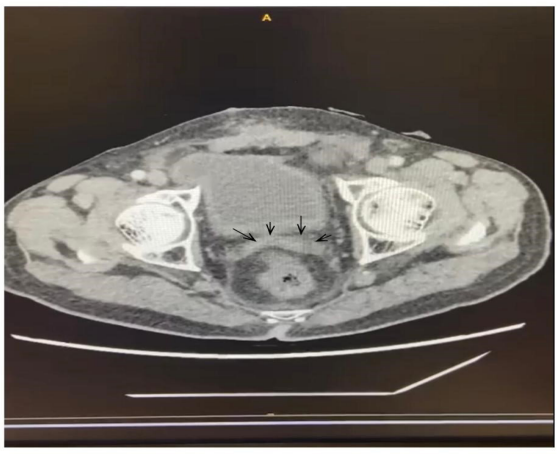

Figure 2. Mass obstructıon of rectosigmoid junction ,tomografic view

CASE 2

An 81-year-old male patient with no known comorbidities, drug use or previous operations was admitted to the emergency department with abdominal pain for 10 days and absence of gas and stool discharge for 2 days. General condition was moderate, consciousness was clear, oriented and coherent. Abdominal examination revealed severe distension. Defense and rebound were negative but tenderness was present in all quadrants. Rectal touch was empty. Blood biochemistry, white blood cell, hemoglobin and platelet counts were normal on admission. Adbg showed multiple air fluid levels in the abdomen. In the whole abdomen tomography taken on admission to the emergency department, there was a mass lesion in the cecum, asymmetric increase in thickness in the wall with a length of approximately 6-7 cm in the ascending colon, slightly extending to the terminal ileum, lymphadenopathies in the periocecal fat plans, the short axis of the largest of which measured 5 mm, and the appearance of contamination and infiltration in the mesenteric fat plans, and this appearance was primarily evaluated in favor of cecal carcinoma. In the proximal part of the mass, dilatation reaching approximately 5 cm in diameter and fecal sign were observed in the terminal ileum and the appearance was found to be significant in terms of subileus (Figure 3). In the colonoscopy performed 10 days ago in an external center, a mass was found in the ascending colon that did not allow the colonoscope to pass proximally, biopsies were taken and the patient was told to present with the biopsy result. The patient was admitted to the emergency surgery service with a prediagnosis of tumor ileus. Resuscitation was started rapidly. Nasogastric catheter (ng) and urinary catheter were inserted. When 200 cc of fecaloid came into ng, it was urgently operated.

Peroperatively, a mass originating from the proximal cecum and ascending colon completely obstructed the lumen. There was no metastasis in intra-abdominal organs. The patient underwent right hemicolectomy and

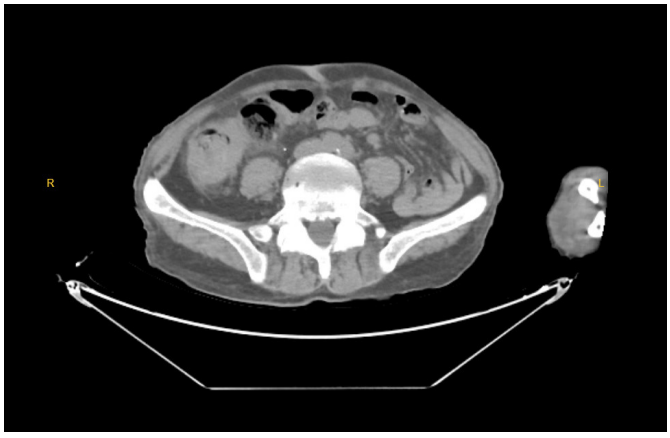

Figure 3. Dilatation of proksimal part of the mass and fecal sign

ileotransversostomy (Figure 4 and 5). Drain was placed. The patient was extubated in the intensive care unit. Oral was started on postop day 3, and the regimen was gradually increased when the patient tolerated oral. Gas and stool discharge occurred on postop day 4. Drains were removed. The wound site was clean and the patient was discharged after appropriate drug treatment was arranged at the end of surgical follow-up. Pathology report was concluded as Mixed Neuroendocrine Non Neuroendocrine Tumor. Neuroendocrine component was 40% and grade 3. Ki 67 was 80%, mitosis rate was greater than 20 in 10 magnification fields. Synaptophysin was positive. Adenocarcinoma component was 40-50% and poorly differentiated. Distal and proximal surgical margins were clear. No metastasis was detected in 14 removed lymph nodes and it was reported as T3N0. The patient was referred to the oncology clinic.

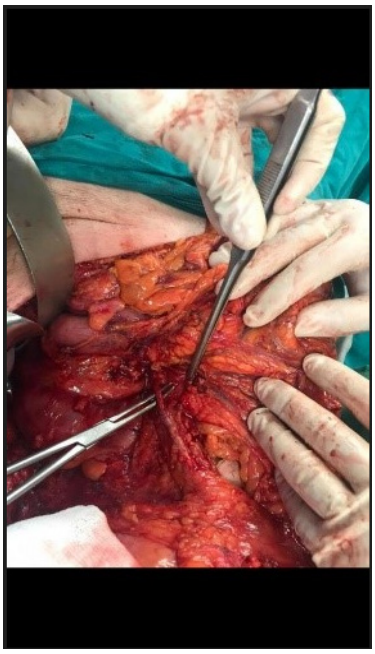

Figure 4. Peroperatif view of right hemicolectomy

Figure 5. Right hemicolectomy spesmen

DISCUSSION

Some of the patients admitted to the emergency room due to acute abdomen have mechanical intestinal obstruction. This condition, which prevents the distal passage of gastrointestinal content, is classified in 3 ways: causes originating from the lumen or wall of the intestine and causes that compress the intestine from the outside. The causes of obstruction are often bridges, intussusception, neoplasms, volvulus, internal/external herniations, strictures due to inflammatory bowel diseases and foreign bodies. Adenocarcinomas are the most common neoplasms.

Although they are thought to be rare tumors with an incidence of approximately 5% among all neoplasms, neuroendocrine tumors are among the tumors with increasing incidence in recent years. Two thirds of neuroendocrine tumors occur in the gastrointestinal tract, one fourth in the lungs and the rest in other endocrine tissues. The most commonly affected sites in the gastrointestinal tract are the small intestine, rectum, stomach and appendix. MINENs constitute a very small proportion of NETs. MINENs have a worse prognosis than other NETs. A study by La Rosa et al. [4,5] proposed a grading of this malignancy. According to this study, MINENs are divided into 3 grades as high, intermediate and low grade.

High-grade MiNEN usually involves a non-neuroendocrine carcinoma (usually adenocarcinoma or acinar cell carcinoma, squamous cell carcinoma) or an adenoma (villous or tubulovillous) and a neuroendocrine component and usually has a more aggressive prognosis. The prognosis of intermediate-grade MiNEN usually includes a grade 1 (G1) or grade 2 (G2) NET component and a non-neuroendocrine component, and the prognosis depends on the non-neuroendocrine component. Low-grade MINEN includes a G1 or G2 NET and a less aggressive non-neuroendocrine component, namely adenoma.

The curative treatment for non-metastatic MINENs is surgical resection. Low-grade MINENs can be followed up without adjuvant treatment, whereas adjuvant chemotherapy is used in intermediate and high-grade MINENs.[4]

CONCLUSION

MINEN, a subtype of neuroendocrine tumors, which is a very rare colonic malignancy, may present with mechanical obstruction clinic like other tumor ileus. Pathologically, it contains adenocarcinoma and neuroendocrine tumor components. Despite the fact that the presence of neuroendocrine tumors is rare in the colon compared to other regions, it should be kept in mind that this type of tumors may be encountered in addition to adenocarcinoma.

ETHICAL DECLARATIONS

Informed Consent: All patients signed and free and informed consent form.
Referee Evaluation Process: Externally peer-reviewed.
Conflict of Interest Statement: The authors have no conflicts of interest to declare.
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Author Contributions: All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

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I was born in Ankara in 1992. I graduated from Pamukkale University Faculty of Medicine in 2016. Then I worked as a general surgery assistant at Ankara Numune Hospital between 2017 and 2019. I became a general surgery specialist at Ankara Bilkent City Hospital in 2022. I am currently working as a general surgery specialist at Denizli State Hospital.